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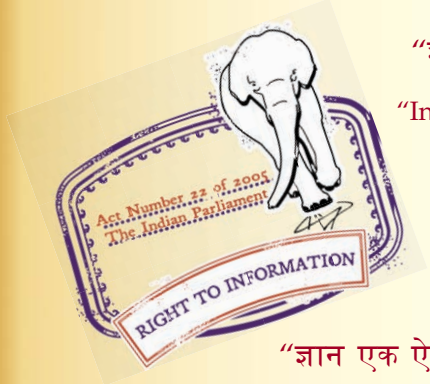

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Indian Standard

SPECIFICATION FOR DEXTRIN FOR USE IN FOUNDRIES

(First Revision)

(First Reprint JULY 1997)

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NEW DELHI 110002

Gr 5 *February* 1981

Indian Standard

SPECIFICATION FOR DEXTRIN FOR USE IN FOUNDRIES

(First Revision)

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Indian Standard

SPECIFICATION FOR DEXTRIN FOR USE IN FOUNDRIES

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 December 1981, after the draft finalized by the Foundry Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1967. While reviewing the standard in the light of the experience gained during these years, the committee decided to revise the standard incorporating the following modifications:

a) Amendment No. 1 issued earlier has been incorporated,

b) Requirements for dextrin have been modified, and

c) Sand mixed properties have been added for the users to evaluate correct type of dextrin for their use.

0.3 Dextrin is a soluble gummy carbohydrate formed by partial hydrolysis of starch by acid, enzyme or heat. It is used in the foundry as a binder for cores to increase dry strength and also as a binder for mould and core washes.

0.4 Besides the requirements of dextrin specified in this standard individual foundries may have to evolve specific floor test requirements to suit their jobs. In order to help foundries to evolve these requirements, a recommended test procedure has been given in Appendix A which is based on the practices followed in the industry.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements for two grades of dextrin for use in foundries (*see* Table 1).

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of dextrin for use in foundries shall be as laid down in IS : 1387-1967*.

TABLE 1 REQUIREMENTS OF DEXTRIN FOR USE IN FOUNDRIES

(*Clause* 3.1)

CONSTITUENT	PERCENT BY WEIGHT		METHOD OF TEST REF TO CLAUSE
	Grade 1 Yellow	Grade 2 White	
(1)	(2)	(3)	(4)
Moisture, *Max*	10	10	B-2
Ash, *Max*	1	0·5	B-3
Insoluble in cold water, *Max*	5	22	B-4
Soluble or reducing sugars, *Max*	5	10	B-5
Dextrin, *Min*	85	65	B-5

3. REQUIREMENTS

3.1 The material shall comply with the requirements given in Table 1, when tested in accordance with the methods given in Appendix B.

3.2 Fineness — Dextrin shall be of such fineness that it shall pass through the 150 μm IS Sieve [*see* IS : 460 (Part I)-1978†].

NOTE — When 150-μm IS Sieve is not available, equivalent BS sieve 100 or ASTM sieve 149 (100) may be used. These BS and ASTM sieves have their apertures within the limits specified for the corresponding IS Sieve.

4. PHYSICAL PROPERTIES OF STANDARD SAND MIXES

4.1 The physical properties of dextrin water sand mixes, when tested in accordance with the procedure specified in Appendix A shall be as given in Table 2 for the different grades of dextrin.

*General requirements for the supply of metallurgical materials (*first revision*).

†Specification for wire cloth test sieves (*second revision*).

TABLE 2 REQUIREMENTS OF PHYSICAL PROPERTIES OF STANDARD SAND MIXES

(*Clause* 4.1)

Requirements	Type of Mix	
	Grade 1	Grade 2
(1)	(2)	(3)
Moisture, percent, *Min*	1·2	1·9
Permeability	240-270	190-220
Green compression strength, *Min*, MPa	0·014 0	0·017 5
*Dry shear strength, *Min*, MPa	0·49	0·35
*Dry tensile strength *Min*, MPa	0·245	0·175

*Sample dried at 220° ± 5°C for 1½ hours.

5. PACKING

5.1 Unless specified otherwise, dextrin shall be supplied in moistureproof bags each containing 50 kg.

6. SAMPLING

6.1 Representative samples of the material for testing shall be drawn as prescribed in Appendix C.

7. MARKING

7.1 The bags shall be clearly marked with the manufacturer's name or trade-mark and grade of the material.

7.2 BIS Certification Marking

The product may also be marked with Standard Mark.

7.2.1 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

APPENDIX A

(*Clauses* 0.4 *and* 4.1)

RECOMMENDED FLOOR TEST PROCEDURE FOR EVALUATING QUALITY OF DEXTRIN FOR USE IN FOUNDRIES

A-0. GENERAL

A-0.1 This appendix describes a practical method for testing dextrin samples by an individual foundry to determine its suitability for a specific application. This is to be used for guidance only as the requirement of each foundry is likely to vary depending on the type of sand used and the type of jobs to be produced.

A-1. PREPARATION OF STANDARD SAND-DEXTRIN-WATER MIXTURE

A-1.1 In order to evaluate the service quality of dextrin, a standard sand-dextrin-water mixture shall be prepared.

A-1.1.1 *Apparatus* — Standard sand mixer and rammer.

A-1.1.2 *Standard Foundry Sand* — Conforming to IS : 3018-1977* shall be used.

A-2. COMPOSITION OF STANDARD SAND MIX

A-2.1 The proportions of the constitution of standard sand mix shall be as follows:

a) Standard silica sand	100
Yellow dextrin	4 percent based on sand
Water	1·2 percent based on sand
b) Standard silica sand	100
White dextrin	4 percent based on sand
Water	1·9 percent based on sand

A-3. PROCEDURE FOR MIXING

A-3.1 Sand and dextrin shall be dry mixed for 2 minutes. Care shall be taken to avoid loss of dextrin by sticking on the parts in mill beyond the reach of the level of the sand during mixing. Predetermined quantity of

*Specification for standard silica sand for raw material testing in foundries.

the water shall be added in slow and uniform stream while the mixer is on and mixed for 3 minutes. Care shall be taken to avoid loss of water. After the mixing cycle is over, the sand shall be discharged on a suitable pan. During discharge scrapping of sides and plough shall be avoided. The sand mix shall be homogenised by a little sand mixing and stored in polythene bag in properly closed condition.

NOTE — Normally a laboratory mill of 2 to 5 kg capacity is designed to give fully developed bond within the time mentioned above. However, the mixing time (water mix) may be standardized for any individual case if 3 minutes time is found to be inadequate.

A-4. TESTING PROCEDURE

A-4.1 The testing of physical properties of the sand mix that is moisture content, permeability, green strength and shatter index shall be carried out in accordance with the procedure specified in IS : 1918-1966*.

APPENDIX B

(*Clause* 3.1, and *Table* 1)

METHODS OF TEST

B-1. QUALITY OF REAGENTS

B-1.1 Unless specified otherwise, pure chemicals shall be employed in the tests and distilled water (*see* IS : 1070-1977†) shall be used where the use of water as a reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test result.

B-2. DETERMINATION OF MOISTURE

B-2.1 Procedure — Weigh accurately about 5 g of the material in a tared porcelain dish and cover it with a watch-glass. Place the dish in an air-oven maintained at 105 ± 1°C and remove the watch-glass. Heat the sample for 4 hours in the oven and cover the dish with the watch-glass before taking it out of the oven. Cool the dish in desiccator and weigh.

*Methods of physical tests for foundry sands.

†Specification for water for general laboratory use (*second revision*).

B-2.2 Calculation

$$\text{Moisture, percent} = \frac{A}{B} \times 100$$

where

A = loss in mass in grams of the material after heating, and

B = mass in grams of the material taken

B-3. DETERMINATION OF ASH

B-3.1 Procedure — Weigh accurately about 5 g of the moisture-free material in a tared silica dish and incinerate at 600°C till the residue in the crucible is constant in mass.

B-3.2 Calculation

$$\text{Ash, percent} = \frac{A}{B} \times (100 - m)$$

where

A = mass in grams of ash,

b = mass in grams of the sample taken, and

m = moisture percent.

B-4. DETERMINATION OF INSOLUBLE IN COLD WATER

B-4.1 Procedure — Weigh accurately about 25 g of the sample. Mix it thoroughly with water in a clean beaker and transfer it to 500-ml volumetric flask. Shake thoroughly for several hours and make it up to the mark. Leave it overnight and pipette out 50 ml of the supernatant liquid in a weighed porcelain dish. Evaporate the liquid on a water-bath, and wipe off the water adhering to the bottom and sides by a clean cloth, dry in an air-oven maintained at 105°C for 10 to 15 minutes very cautiously to avoid charring, cool in a desiccator and weigh to constant weight.

B-4.2 Calculation

$$\text{Insoluble in water, percent} = \frac{B - 10A}{B} \times 100$$

where

B = mass in grams of the sample taken, and

A = mass in grams of the residue in the porcelain dish left after evaporation of 50 ml supernatant liquid.

B-5. DETERMINATION OF SOLUBLE OR REDUCING SUGARS AND DEXTRIN CONTENTS

B-5.1 Reagents

B-5.1.1 *Lead Sub-acetate Solution* — Activate about 200 g of litharge by heating at 650 to 670°C for 3 hours (cooled product should be of lemon colour). Boil 430 g natural lead acetate, 130 g freshly activated litharge and 1 litre water for 30 minutes. Cool and allow to settle. Dilute the supernatant liquid to specific gravity 1·25 with freshly boiled and cooled distilled water.

B-5.1.2 *Stock Solution of Dextrose* — Weigh accurately 10 g of anhydrous dextrose into a 1-litre volumetric flask and dissolve it in water. Add to this solution 2·5 g benzoic acid, shake to dissolve the benzoic acid and make up the volume to the mark with water. This solution should not be used after 48 hours.

B-5.1.3 *Standard Dextrose Solution* — Dilute a known aliquot of the stock solution of dextrose (*see* **B-5.1.2**) with water containing 0·25 percent (*m/v*) benzoic acid to such a concentration that more than 15 ml but less than 50 ml of it shall be required to reduce all the copper in the Fehling's solution taken for titration. Note the concentration of anhydrous dextrose in this solution as milligrams per 100 ml. Prepare this solution fresh every day.

NOTE — When 10 ml of Fehling's solution (*see also* **B-5.2.2.3**) are taken for titration, a standard dextrose solution containing 0·11 to 0·30 percent (*m/v*) of anhydrous dextrose is convenient for use.

B-5.1.4 *Methylene Blue Indicator Solution* — Dissolve 0·2 g of methylene blue in water and dilute to 100 ml.

B-5.1.5 *Fehling's Solution (Soxhlet Modification)* — Prepared by mixing immediately before use, equal volumes of solution A (*see* **B-5.1.5.1**), and solution B (*see* **B-5.1.5.2**).

B-5.1.5.1 *Solution A* — Dissolve 34·639 g of copper sulphate ($CuSO_4 . 5H_2O$) in water, and 0·5 ml of concentrated sulphuric acid of sp gr 1·84 (conforming to Grade *AR* of IS : 266-1977 *), and dilute to 500 ml in a volumetric flask. Filter the solution through prepared asbestos.

B-5.1.5.2 *Solution B* — Dissolve 173 g of Rochelle salt [potassium sodium tartrate ($KNaC_4H_4O_6 . 4H_2O$)] and 50 g of sodium hydroxide, analytical reagent (conforming to IS : 376-1976†) in water, dilute to

*Specification for sulphuric acid (*second revision*).

†Specification for sodium hydroxide, analytical reagent (*second revision*).

500 ml in a volumetric flask and allow the solution to stand for 2 days. Filter this solution through prepared asbestos.

B-5.1.5.3 *Standardization of Fehling's solution* — Pour standard dextrose solution (*see* **B-5.1.3**) into a 50-ml burette (*see* Note 1). Find the titre (volume of standard dextrose solution required to reduce all the copper in 10 ml of Fehling's solution) corresponding to the concentration of standard dextrose solution from Table 3. (For example, if the standard dextrose solution contains 167·0 mg of anhydrous dextrose per 100 ml, the corresponding titre would be 30 ml.) Pipette 10 ml (*see also* **B-5.2.2.3**) of Fehling's solution into a 300-ml conical flask and run in from the burette almost the whole of the standard dextrose solution required to affect reduction of all the copper, so that not more than 1 ml will be required later to complete the titration. Heat the flask containing the mixture over a wire gauze. Gently boil the contents of the flask for 2 minutes. At the end of 2 minutes of boiling, add, without interrupting boiling, 1 ml of methylene blue indicator solution. While the contents of the flask continue to boil, begin to add standard dextrose solution (one or two drops at a time) from the burette till the blue colour of the indicator just disappears. [The titration should be completed within 1 minute, so that the contents of the flask boil altogether for 3 minutes without interruption (*see* Note 2)]. Note the titre in millilitres of standard dextrose solution. Multiply the titre (obtained by direct titration) by the number of milligrams of anhydrous dextrose in 1 ml of the standard dextrose solution to obtain the dextrose factor. Compare this factor with the dextrose factor given in Table 3 and determine correction, if any, to be applied to the dextrose factors derived from Table 3.

NOTE 1 — In adding sugar solution to the reaction mixture the burette may be held in hand over the flask. The burette may be fitted with a small outlet tube bent twice at right angles, so that the body of the burette can be kept out of the stream while adding sugar solution. Burettes with glass taps are unsuitable for this work, as the taps become heated by the steam and are liable to jam.

NOTE 2 — It should be observed that with both incremental and standard methods of titration, the flask containing the reaction mixture is left on the wire gauze over the flame throughout the titration, except when it may be removed for a few seconds to ascertain if the end point is reached.

Example:

Concentration of anhydrous dextrose in standard dextrose solution, mg/100 ml = 167·0

Titre obtained by direct titration = 30·1 ml

Dextrose factor for 30·1 ml of standard dextrose solution (titre in millimetres × number of milligrams of anhydrous dextrose in 1 ml of standard dextrose = 30·1 × 1·670 = 50·267 0

Dextrose factor for 30·1 ml of standard dextrose solution from Table 3 (calculated by interpolation) = 50·11

Correction to be applied to the dextrose factors derived from Table 3 = 50·267 0 − 50·11 = + 0·157 0

TABLE 3 DEXTROSE FACTORS FOR 10 ml OF FEHLING'S SOLUTION

(*Clauses* B-5.1.5.3 *and* B-5.2.2.3)

TITRE	*DEXTROSE FACTOR	ANHYDROUS DEXTROSE PER 10 ml OF SOLUTION
ml		mg
(1)	(2)	(3)
15	49·1	327
16	49·2	307
17	49·3	289
18	49·3	274
19	49·4	260
20	49·5	247·4
21	49·5	235·8
22	49·6	225·5
23	49·7	216·1
24	49·8	207·4
25	49·8	199·3
26	49·9	191·8
27	49·9	184·9
28	50·0	178·5
29	50·0	172·5
30	50·1	167·0
31	50·2	161·8
32	50·2	156·9
33	50·3	152·4
34	50·3	148·0
35	50·4	143·9
36	50·4	140·0
37	50·5	136·4
38	50·5	132·9
39	50·6	129·6

*Milligrams of anhydrous dextrose corresponding to 10 ml of Fehling's solution.

(*Continued*)

TABLE 3 DEXTROSE FACTORS FOR 10 ml OF FEHLING'S SOLUTION — *Contd*

TITRE	*DEXTROSE FACTOR	ANHYDROUS DEXTROSE PER 10 ml OF SOLUTION
ml		mg
(1)	(2)	(3)
40	50·6	126·5
41	50·7	123·6
42	50·7	120·8
43	50·8	118·1
44	50·8	115·5
45	50·9	113·0
46	50·9	110·6
47	51·0	108·4
48	51·0	106·2
49	51·0	104·1
50	51·1	102·2
—	—	—
—	—	—
—	—	—
—	—	—

*Milligrams of anhydrous dextrose corresponding to 10 ml of Fehling's solution.

B-5.2 Procedure

B-5.2.1 Weigh accurately 10 g of the moisture-free sample (*see* **B-2.1**) in a beaker. Mix it thoroughly with 100 ml of distilled water. Transfer to a 250-ml volumetric flask. Add drop by drop lead sub-acetate solution till precipitation is complete. Make the solution up to the mark by adding distilled water. Mix thoroughly and allow it to settle down. Filter the supernatant liquid, collect the filtrate in a dry beaker. Add dry potassium oxalate to the filtrate to remove excess of lead. Filter and collect the filtrate as the clarified solution in a 250-ml flask. Make it up to mark for subsequent estimations of soluble or reducing sugar and dextrin.

B-5.2.2 *Estimation of Soluble or Reducing Sugars*

B-5.2.2.1 *Incremental method of titration* — Pour the clarified solution (*see* **B-5.2.1**) into a 50-ml burettee (*see* Note 1 *under* **B-5.1.5.3**). Pipettee 10 ml of Fehling's solution into a 300-ml conical flask and run in from

the burette 15 ml of the clarified solution. Without further dilution, heat the contents of the flask over a wire gauze, and boil. After the liquid has been boiling for about 15 seconds, it will be possible to judge if the copper is almost reduced by the bright red colour imparted to the boiling liquid by the suspended cuprous oxide. When it is judged that nearly all the copper is reduced, add 1 ml of methylene blue indicator solution (*see* Note 1). Continue boiling the contents of the flask for 1 to 2 minutes from the commencement of ebulition, and then add the clarified solution in small quantities (1 ml or less at a time) allowing the liquid to boil for about 10 seconds between successive additions, till the blue colour of the indicator just disappears (*see* Note 2 *under* **B-5.1.5.3**). In case there appears to be still much unreduced copper, after the mixture of Fehling's solution with 15 ml of the clarified solution has been boiling for 15 seconds, add the clarified solution from the burette in larger increments (more than 1 ml at a time, according to judgement) and allow the mixture to boil for 15 seconds after each addition. Repeat the addition of the clarified solution at intervals of 15 seconds until it is considered unsafe to add a large increment of the clarified solution. At this stage continue the boiling for an additional 1 to 2 minutes, add 1 ml of methylene blue indicator solution and complete the titration by adding the clarified solution in small quantities (less than 1 ml at a time) (*see also* Note 2).

NOTE 1 — It is advisable not to add the indicator until the neighbourhood of the end point has been reached, because the indicator retains its full colour until the end point is almost reached and thus gives no warning to the operator to go slowly.

NOTE 2 — When the operator has had a fair amount of experience with the method, a sufficiently accurate result may often be obtained by a single estimation by the incremental method of titration, but for the utmost degree of accuracy of which the method is capable a second titration should be carried out by the standard method of titration (*see* **B-5.2.2.2**).

B-5.2.2.2 *Standard method of titration* — Pipette 10 ml of Fehling's solution into a 300-ml conical flask and run in from the burette almost the whole of the clarified solution required to effect reduction of all the copper (determined under **B-5.2.2.1**), so that, if possible, not more than 1 ml shall be required later to complete the titration. Gently boil the contents of the flask for 2 minutes. At the end of 2 minutes of boiling, add, without interrupting boiling, 1 ml of methylene blue indicator solution. While the contents of the flask continue to boil, begin to add standard dextrose solution (one or two drops at a time), from the burette till the blue colour of the indicator just disappears. The titration should be completed within 1 minute, so that the contents of the flask boil altogether for 3 minutes without interruption (*see* Note 2 under **B-5.1.5.3**).

NOTE — The indicator is so sensitive that it is possible to determine the end point within one drop of the clarified solution in many cases. The complete decolourization of the methylene blue is usually indicated by the whole reaction

liquid in which the cuprous oxide is continuously churned up becoming bright red or orange in colour. In case of doubt the flame may be removed from the wire gauze for 1 or 2 seconds and the flask held against a sheet of white paper. (A holder of paper, suitably fixed round the neck of the flask, is very convenient for this purpose as it can be left round the neck of the flask without risk of overbalancing it.) The top edge of the liquid would appear bluish if the indicator is not completely decolourized. It is advisable not to interrupt the boiling for more than a few seconds as the indicator undergoes back oxidation rather rapidly when air is allowed free access to flask, but there is no danger of this as long as a continuous stream of steam is issuing from the mouth of the flask.

B-5.2.2.3 *Calculation* — Refer to Table 3 for the dextrose factor corresponding to the titre (determined as given under **B-5.2.2.2**) and apply the correction previously determined under **B-5.1.5.3**. Calculate the dextrose content of the clarified solution (*see* **B-5.2.1**) as follows:

$$\text{Anhydrous dextrose present in 1 ml of the clarified solution } w, \text{ ml} = \frac{\text{dextrose factor}}{\text{Titre}}$$

Instead of using 10 ml of Fehling's solution, a 25 ml portion may also be substituted throughout the procedure (including standardization of Fehling's solution under **B-5.1.5.3**). In this case standard dextrose solution, used in standardizing the Fehling's solution and the clarified solution of the material (*see* **B-5.1.3**) should contain 0·25 to 0·75 percent (*m/v*) of anhydrous dextrose and Table 4 should be used for all such calculations.

NOTE — Tables 3 and 4 show for the standard method of titration, the values corresponding to integral millilitres of the sugar solutions, values corresponding to intermediate figures being obtained by interpolation.

$$\text{Reducing sugars content of the material, percent by mass (on anhydrous dextrose basis)} = \frac{wV}{10W}$$

where

w = milligrams of anhydrous dextrose in 1 ml of the clarified solution (*see* **B-5.2.2.3**),

V = total volume in millilitres of the clarified solution of the material prepared (*see* **B-5.2.1**), and

W = mass in grams of the material used to prepare V ml of the clarified solution (*see* **B-5.2.1**).

B-5.2.3 *Estimation of Dextrin Content* — Take 50 ml of clarified solution (*see* **B-5.2.1**) in a clean 400 ml flask. Add 20 ml hydrochloric acid (sp gr 1·18) and 100 ml water. Boil gently using a water-cooled reflux condenser for two and a half hours. Cool to room temperature. Neutralize the solution with sodium hydroxide solution (1 : 1). Transfer the solution to a 500-ml volumetric flask and make up to the mark. Determine the invert sugar in percent by mass as under **B-5.2.2.** Substract from this the percentage of reducing sugars obtained under **B-5.2.2** and multiply it by 0·9 to get the percentage of dextrin.

TABLE 4 DEXTROSE FACTORS FOR 25 ml OF FEHLING'S SOLUTION

(*Clause* B-5.2.2.3)

TITRE	*DEXTROSE FACTOR	ANHYDROUS DEXTROSE PER 100 ml OF SOLUTION
ml		mg
(1)	(2)	(3)
15	120·2	801
16	120·2	751
17	120·2	707
18	120·2	668
19	120·3	633
20	120·3	601·5
21	120·3	572·9
22	120·4	547·3
23	120·4	532·6
24	120·5	501·9
25	120·5	482·0
26	120·6	463·7
27	120·6	446·8
28	120·7	431·1
29	120·7	416·4
30	120·8	402·7
31	120·8	389·7
32	120·8	377·6
33	120·9	366·3
34	120·9	355·6
35	121·0	345·6
36	121·0	336·3
37	121·1	327·4
38	121·2	318·8
39	121·2	310·7
40	121·2	303·1
41	121·3	296·9
42	121·4	289·0
43	121·4	282·4
44	121·5	276·1
45	121·5	270·1
46	121·6	264·3
47	121·6	258·8
48	121·7	253·5
49	121·7	248·4
50	121·8	243·6

*Milligrams of anhydrous dextrose corresponding to 25 ml of Fehling's solution.

APPENDIX C

(*Clause* 6.1)

SAMPLING OF DEXTRIN FOR USE IN FOUNDRIES AND CRITERIA FOR CONFORMITY

C-1. SCALE OF SAMPLING

C-1.1 Lot — In any consignment, all the bags of material of the same grade and drawn from the same batch of manufacture shall be grouped together to constitute a lot.

C-1.1.1 Tests for the determination of the conformity of a lot to the requirements of the specification shall be done for each lot separately. The number of bags to be selected at random for this purpose from a lot shall be as given below:

No. of Bags in the Lot	*No. of Bags to be Selected*
Up to 15	3
16 „ 25	4
26 „ 50	5
51 „ 100	7
101 and above	10

C-2. PREPARATION OF TEST SAMPLES

C-2.1 From each of the bags selected according to **C-1.1.1**, small portions of the material shall be drawn with the help of a suitable sampling instrument from different parts of the bags. The total quantity of the material so drawn from each bag shall be not less than 200 g and these shall form the individual samples representative of the different bags selected.

C-2.2 From each of the individual sample formed according to **C-2.1,** approximately 150 g of the material shall be drawn and mixed together to form a composite sample. The composite sample so formed may be reduced further, if necessary, by coning and quartering so as to obtain enough material sufficient to conduct all the tests specified in this standard.

C-3. NUMBER OF TESTS

C-3.1 Tests for the determination of dextrin content shall be conducted on each of the individual samples (*see* **C-2.1**) separately.

C-3.2 Tests for the determination of all other characteristics mentioned in Table 1 shall be conducted on the composite sample (*see* **C-2.2**)

C-4. CRITERIA FOR CONFORMITY

C-4.1 The lot shall be declared as conforming to the requirements of the specification if the conditions stipulated in **C-4.1.1** and **C-4.1.2** are satisfied.

C-4.1.1 From the individual test results for dextrin content, the mean and range (difference between the maximum and minimum values of test results) shall be calculated.

The value of the expression (Mean — 0·6 Range) shall then be found to be greater than or equal to the relevant minimum value specified in Table 1.

C-4.1.2 The test results for all the characteristics determine on the composite sample shall be found to be satisfactory.

(*Continued from page* 2)

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